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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/649,474	08/26/2003	Gregory R. Hanson	UBAT1520	5373

38396 7590 07/20/2005

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EXAMINER

CONNOLLY, PATRICK J

ART UNIT PAPER NUMBER

2877

DATE MAILED: 07/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary

Application No.

10/649,474

Applicant(s)

HANSON ET AL.

Examiner

Patrick J. Connolly

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 March 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-26 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 26 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 06/18/04; 03/30/05.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities:

Page 9 requires a serial number of a copending application.

Appropriate correction is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-22 of copending

Application No. 10/649,251. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following:

As to instant claims 1-15, copending claims 1-15 of '251 are of similar scope, such that it would be obvious to digitally record a single spatially heterodyned hologram, or multiple spatially heterodyned holograms and perform the subsequent Fourier analysis and filtering, and

that said single or multiple recordings and analyses could take place in series or simultaneously, with respect to both transmissive and reflective properties of the object under test.

As to instant claims 16-26, copending claims 11-22 are of similar scope for the reasons given with respect to the method above.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-7 and 16-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1-20 of copending **Application No. 10/234,042**. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following:

As to instant claims 1-7, copending claims 1-9 of '042 are broader in scope and therefore already include the limitations of said instant claims.

As to instant claims 16-26, copending claims 10-20 of '042 are broader in scope and therefore already include the limitations of said instant claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-27 of copending **Application No. 10/234,043**. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following:

As to instant claims 1-7, copending claims 1-16 of '043 are of similar scope, such that it would be obvious to digitally record a single spatially heterodyned hologram, or multiple spatially heterodyned holograms and perform the subsequent Fourier analysis and filtering, and that said single or multiple recordings and analyses could take place in series or simultaneously, with respect to both transmissive and reflective properties of the object under test.

As to instant claims 16-26, copending claims 17-27 of '043 are of similar scope for the reasons given with respect to the method above.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Claims 1-26 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-25 of U.S. Patent No. 6,747,771. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following:

As to instant claims 1-7, patented claims 1-4 and 11-16 of '771 are of similar scope, such that it would be obvious to digitally record a single spatially heterodyned hologram, or multiple spatially heterodyned holograms and perform the subsequent Fourier analysis and filtering, and that said single or multiple recordings and analyses could take place in series or simultaneously, with respect to both transmissive and reflective properties of the object under test.

As to instant claims 16-26, patented claims 17-25 of '771 are of similar scope for the reasons given with respect to the method above.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-5, 12, 14, 15 and 16-23, 25 and 26 are rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent Application Publication No. 2004/0042056 to Price et al (hereafter Price et al).

The applied reference has a common assignee and common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

As to claims 1 and 12, Price et al teaches a method and apparatus of off-axis direct-to-digital holography including (see paragraphs 0033-0037, also Figure 4):

digitally recording multiple spatially-heterodyned holograms including spatial heterodyne fringes for Fourier analysis including multiple reference and object beams (see Figure 4, paragraphs 0037-0040);

Fourier analyzing multiple digitally recorded spatially-heterodyned holograms, by shifting a multiple respective original origin of the digitally recorded first spatially-heterodyned hologram to sit on top of a respective spatial-heterodyne carrier frequency defined by a angle between the respective multiple reference beams and the respective multiple object beams, to define multiple analyzed images (see paragraph 0033-0034, also 0037-0040);

digitally filtering respective analyzed images to cut off signals around respective origins to define multiple results;

performing inverse Fourier transforms on the multiple results (see paragraph 0034).

Price et al teaches that DDH measurements of the object can be performed by reflection (see the Figures) or through transmission (see paragraph 0039).

Price et al also teaches taking multiple DDH measurements simultaneously (see analysis above).

It would have been obvious to one of ordinary skill in the art at the time of invention to take both a reflective and transmissive DDH measurement of the object simultaneously so as to have a more complete DDH image of the object.

As to claims 2 and 3, Price et al teaches single pixilated detectors and separate digital images (see paragraph 0038).

As to claims 4 and 5, Price et al teaches combining holograms into a single image (see paragraphs 0042-0044).

As to claims 14 and 15, Price et al teaches that the method of DDH as a method of metrology and photolithographic mask inspection.

As to claims 16-23, 25 and 26, Price et al teaches an apparatus for DDH including multiple beamsplitters, lenses, expander and filters for multiple DDH measurements (see paragraph 0039).

While Price et al does not teach an apparatus for simultaneous transmissive and reflective DDH measurements, it would have been obvious to arrange the optical elements of Price's DDH apparatus so as to enable this measurement so as to achieve a more complete DDH image of the object to be measured (see analysis with respect to the method claims 1-5, 12, 14 and 15 above).

Claims 1-5, 12, 14, 15 and 16-23, 25 and 26 are rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent Application Publication No. 2004/0042015 to Price (hereafter Price).

The applied reference has a common assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference

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under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C.

103(a). See MPEP § 706.02(1)(1) and § 706.02(1)(2).

As to claims 1 and 12, Price teaches a method and apparatus of off-axis direct-to-digital holography including (see paragraphs 0033-0046, also Figures 3 and 4):

digitally recording multiple spatially-heterodyned holograms including spatial heterodyne fringes for Fourier analysis including multiple reference and object beams (see Figure 4, paragraphs 0033-0046);

Fourier analyzing multiple digitally recorded spatially-heterodyned holograms, by shifting a multiple respective original origin of the digitally recorded first spatially-heterodyned hologram to sit on top of a respective spatial-heterodyne carrier frequency defined by a angle between the respective multiple reference beams and the respective multiple object beams, to define multiple analyzed images (see paragraphs 0033-0046);

digitally filtering respective analyzed images to cut off signals around respective origins to define multiple results;

performing inverse Fourier transforms on the multiple results (see paragraph 0033-0046).

Price teaches that DDH measurements of the object can be performed by reflection (see the Figures) or through transmission (see paragraph 0033-0046).

Price also teaches taking multiple DDH measurements simultaneously (see analysis above).

It would have been obvious to one of ordinary skill in the art at the time of invention to take both a reflective and transmissive DDH measurement of the object simultaneously so as to have a more complete DDH image of the object.

As to claims 2 and 3, Price teaches single pixilated detectors and separate digital images (see paragraphs 0033-0046).

As to claims 4 and 5, Price teaches combining holograms into a single image (see Figure 4).

As to claims 14 and 15, Price teaches that the method of DDH as a method of metrology and photolithographic mask inspection.

As to claims 16-23, 25 and 26, Price teaches an apparatus for DDH including multiple beamsplitters, lenses, expander and filters for multiple DDH measurements (see paragraph 0033-0046).

While Price does not teach an apparatus for simultaneous transmissive and reflective DDH measurements, it would have been obvious to arrange the optical elements of Price's DDH apparatus so as to enable this measurement so as to achieve a more complete DDH image of the object to be measured (see analysis with respect to the method claims 1-5, 12, 14 and 15 above).

Claims 1-5, 12, 14, 15 and 16-23, 25 and 26 are rejected under 35 U.S.C. 103(a) as being obvious over U.S. Patent No. 6,747,771 to Thomas et al (hereafter Thomas).

The applied reference has a common assignee and inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). This rejection might also be overcome by showing that the reference is disqualified under 35 U.S.C. 103(c) as prior art in a rejection under 35 U.S.C. 103(a). See MPEP § 706.02(l)(1) and § 706.02(l)(2).

As to claims 1 and 12, Thomas teaches a method and apparatus of off-axis direct-to-digital holography including (see columns 4-7):

digitally recording multiple spatially-heterodyned holograms including spatial heterodyne fringes for Fourier analysis including multiple reference and object beams (see columns 4-7);

Fourier analyzing multiple digitally recorded spatially-heterodyned holograms, by shifting a multiple respective original origin of the digitally recorded first spatially-heterodyned hologram to sit on top of a respective spatial-heterodyne carrier frequency defined by a angle between the respective multiple reference beams and the respective multiple object beams, to define multiple analyzed images (see columns 4-7);

digitally filtering respective analyzed images to cut off signals around respective origins to define multiple results;

performing inverse Fourier transforms on the multiple results (see columns 4-7).

Thomas teaches that DDH measurements of the object can be performed by reflection (see the Figures) or through transmission (see columns 4-7).

Thomas also teaches taking multiple DDH measurements simultaneously (see analysis above).

It would have been obvious to one of ordinary skill in the art at the time of invention to take both a reflective and transmissive DDH measurement of the object simultaneously so as to have a more complete DDH image of the object.

As to claims 2 and 3, Thomas teaches single pixilated detectors and separate digital images (see columns 4-7).

As to claims 4 and 5, Thomas teaches combining holograms into a single image (see Figures 7A-7F).

As to claims 14 and 15, Thomas teaches that the method of DDH as a method of metrology and photolithographic mask inspection.

As to claims 16-23, 25 and 26, Thomas teaches an apparatus for DDH including multiple beamsplitters, lenses, expander and filters for multiple DDH measurements (see columns 4-7).

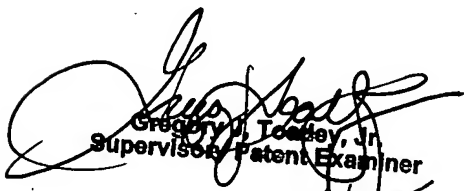
While Thomas does not teach an apparatus for simultaneous transmissive and reflective DDH measurements, it would have been obvious to arrange the optical elements of Price's DDH apparatus so as to enable this measurement so as to achieve a more complete DDH image of the object to be measured (see analysis with respect to the method claims 1-5, 12, 14 and 15 above).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J. Connolly whose telephone number is 571.272.2412. The examiner can normally be reached on 9:00 am - 7:00 pm Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on 571.272.2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

pjc/mlc
07.08.2005


Gregory J. Toatley, Jr.
Supervisor Patent Examiner
14 Jan 05